

### **REMARKS**

Claims 1, 3-8, 10-20, 22, 24-28 and 30-43 are pending.

Claims 2, 9, 21, 23, 29 and 44-77 have been canceled.

Claim 1 has been amended to recite the subject matter of canceled claim 9. This description can also be found on page 34, lines 10 to 18. Claims 3-8 have been amended to so that the identifiers of the property limitations remain in numerical order.

No new matter has been added by way of the above-amendment.

### **Prior Art Based Issues**

The following prior art based issues are pending:

(A) Claim 1 is rejected under 35 USC 102(b) as being unpatentable over Malmberg et al. (Macromolecules, 1998, cited in July 12, 2006 IDS); and

(B) Claims 3-9 are rejected under 35 USC 102(b) as anticipated by or, in the alternative, under 35 USC 103(a) as being unpatentable over Malmberg et al.

Applicants respectfully traverse the rejections.

With respect to Rejection (A), Applicants respectfully submit that this rejection has been rendered **moot** in view of the above-amendment wherein claim 9, a claim not currently under rejection, has been incorporated into claim 1.

In view of the fact that claim 9 was included in Rejection (B), Applicants now comment on Rejection (B). We begin with the reasons why amended claim 1 is not anticipated by Malmberg et al.

The Examiner has taken the position that Malmberg et al. teach an ethylene (co)polymer having branches of a length equivalent to that of hexyl or longer as measured by  $^{13}\text{C}$ -NMR of in a number of less than 0.1 per 1,000 of carbon atoms. Specifically, Malmberg et al. teach:

According to this analysis, the homo polypropylene sample B5 contains branches longer than six carbon atoms. The estimated content of the branches is maximum 0.2 branches per 1000 carbon atoms.

The Examiner interprets this to mean that the number of hexyl branches per 1000 C of example B5 disclosed in Malmberg et al. is less than 0.2.

However the opinion of the examiner is not correct. The reason is as follows.

Malmberg et al. disclose that the estimated content of the branches is a maximum of 0.2 branches per 1000 carbon atoms by a measurement of  $^{13}\text{C}$ -NMR and the analysis thereof. The description of "The estimated content of branches" should be taken with the description, "maximum 0.2 branches per 1000 carbon atoms" to mean that the value of 0.2/1000 is not an exact value because of possible measurement error. So this statement of Malmberg et al. was not intended to convey that the sample has *very* few branches like less than 0.1 branches per 1000 carbon atoms. Malmberg et al. only disclose that the estimated content of long-branches is 0.2 branches per 1,000 carbon atoms. The term "is maximum" is used to denote that there is an error in the estimation. Under these circumstances it is unreasonable to conclude that sample B5 has less than 0.1 branches per 1,000 carbon atoms; therefore the description by Malmberg et al. cannot be the basis for anticipation of newly amended claim 1 of the present application.

Malmberg et al. disclose that the existence of long branches explains the unique rheological behavior of the polymer obtained with the specific catalyst and the behavior is observed *when the amount of long branches is about 0.2 per 1000 carbon atoms*. This relationship between the presence of long chains and unique rheological behavior is shown in a variety of polymers. Malmberg et al. repeatedly disclose that the polyethylene has long branches. See page 8450 left column lines 1 to 2, right column lines 3 to 7 and 18 to 20 and

conclusions on page 8453. But Malmberg et al. never disclose that the number of branches is or must be small.

The present invention has characteristics that it exhibits an excellent mechanical strength because the number of long chains is small. So the polymer in the present invention is different from the sample disclosed in Malmberg et al. As the MPEP directs, all the claim limitations must be taught or suggested by the prior art to establish a *prima facie* case of anticipation. See MPEP § 2131. Since Malmberg et al. fail to teach or fairly suggest such a low number of branches as is required in amended claim 1, Malmberg et al. do not anticipate the present invention.

Furthermore, it is Applicants' position that Malmberg et al. do not make the presently claimed invention obvious.

As mentioned above, Malmberg et al. disclose that an ethylene homopolymer has branches longer than six carbon atoms when the polymer is obtained using a specific catalyst and the existence of the long chains explains its unique rheological behavior. That means the characteristic of the polymer disclosed in Malmberg et al. is that it contains long chains.

The present invention has made clear that the existence of branches having a length equivalent to that of hexyl and longer causes the decrease of mechanical strength of the polymer. So, as the index, the number of the branches was limited to less than 0.1 branches per 1000 carbon atoms. The polymer of the present invention has a characteristic that the polymer has excellent mechanical strength compared to the polymer disclosed in Malmberg et al., which has a higher concentration of long chains.

As the MPEP directs, all the claim limitations must be taught or suggested by the prior art to establish a *prima facie* case of obviousness. See MPEP § 2143.03. In view of the fact that Malmberg et al. fail to teach or fairly suggest such a low number of branches as is required in amended claim 1, Malmberg et al. do not make obvious the present invention.

Based on the foregoing, withdrawal of Rejection (**B**) is respectfully requested.


In view of the above amendment, applicant believes the pending application is in condition for allowance.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Garth M. Dahlen, Ph.D., Esq. Reg. No. 43,575 at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§1.16 or 1.14; particularly, extension of time fees.

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Respectfully submitted,

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